

Chapter 6

UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

This chapter of the Program EIR/EIS describes any potentially significant environmental effects that may not be avoidable if the proposed Rail Improvements Alternative is selected for implementation, as required by CEQA, and any unavoidable adverse impacts of the alternatives, as required by NEPA. This chapter also describes any significant irreversible or irretrievable commitments of resources or foreclosures of future options that would result from implementation of the proposed Rail Improvements Alternative or the No Project Alternative¹.

This Program EIR/EIS represents the first conceptual planning stage of a tiered environmental evaluation that analyzes a broad range of alternatives and alignment options. Most potentially significant impacts that have been described in previous sections of this document can be avoided or minimized by selecting an alignment option that avoids or minimizes impacts on environmental resources through refinement to the design or specific location of the alignment or station improvements or through incorporation of mitigation measures. For example, some potentially significant impacts on sensitive habitat or wetlands would occur in areas where alignment options are available that would avoid or minimize the impact, such as tunneling or designing the alignment to avoid the sensitive area. In addition, potential noise impacts would occur in residential areas along the alignment corridors where significant noise levels could be reduced to less than significant with implementation of mitigation measures such as noise walls between the train track and the residential receptors. However, there are some unavoidable potentially significant impacts that could occur as a result of implementation of the alternatives under consideration. Those impacts are discussed below.

6.1 UNAVOIDABLE POTENTIALLY SIGNIFICANT IMPACTS

6.1.1 Fuel Consumption and Energy Use

Energy consumption from the number of locomotives traveling in the LOSSAN corridor would be the same under either the No Project or the Rail Improvements Alternative because train travel in the corridor is projected to nearly double by 2020, with or without the proposed improvements. Under either alternative, annual operational (direct) energy use by locomotives in the year 2020 would be approximately 361,922 barrels of oil.

Construction of rail improvements would consume on the order of 14,066 billion Btus. This, along with energy consumed by secondary facilities supporting project construction, would potentially represent a significant, unavoidable use of nonrenewable resources. The No Project Alternative would not result in any construction-related energy consumption.

6.1.2 Biological and Wetlands Resources, Section 4(f) and 6(f) Resources, Cultural and Paleontological Resources, Visual Resources, and Geology and Soils

The Rail Improvements Alternative would commit the use of land and natural resources to an expanded or relocated rail right-of-way. Some potentially significant unavoidable impacts on

¹ As described in Chapter 3, potential impacts of the No Project Alternative in this document are those impacts beyond those identified in separate environmental documents prepared for specific, programmed highway and rail projects included in the No Project Alternative (defined in Chapter 2).

biological resources (habitat for threatened and endangered species, and wetlands) may occur where the land required for right-of-way for rail expansion contains wetlands or wildlife habitat for special-status species. Temporary impacts during construction could also be potentially significant, especially in areas of sensitive lagoon habitat. Similarly, potential unavoidable impacts on Section 4(f), cultural, and visual (scenic landscapes) resources could occur where alignment options (tunnels or elevated alignments or right-of-way adjustments) would not be feasible or practicable. Proposed rail alignments would require relatively straight, flat, long linear features; moving or curving the alignment to avoid resources might not always be feasible, and may result in impacts to other resources. However, the majority of proposed rail improvements would be within the existing LOSSAN rail corridor or in tunnels. Therefore impacts outside the existing rail right-of-way would be reduced or avoided along much of the corridor's length.

Only general statements of potential impacts can be made at this program level of review, since field studies were not conducted and the buffer area used for the analysis was in most instances many times larger than the actual right-of-way for the alignments under consideration. Such impacts would need to be further studied and clarified in the next stage of project design and environmental review, when more specific information would be available on the right-of-way needed for proposed alignments and station improvements and on the specific properties potentially affected. The objective at the project-specific stage of analysis would be to identify design options (plans and profiles) that would avoid these sensitive resources, to the extent feasible.

The No Project Alternative would not result in any additional unavoidable, adverse impacts to biological resources and wetlands, Section 4(f) or 6(f) properties, cultural and paleontological resources, or aesthetic resources. The No Project Alternative may result in potentially significant impacts to geology and soils in the coastal bluff areas of Del Mar and San Clemente. In these areas, the existing rail corridor along the bluffs would continue to operate with more frequency in the future, and may require increased and on-going stabilization measures due to on-going erosional processes. Both the natural erosion processes and the construction of stabilizing structures could have potentially significant effects.

6.1.3 Construction Impacts

Construction of the Rail Improvements Alternative would result in the irreversible commitment of resources. Fossil fuels, labor, and construction materials would be expended in the construction of the rail improvements. Further, labor and natural resources would be used in the fabrication and preparation of construction materials. Once used or expended, these materials are generally not retrievable. However, these materials are not in short supply and their use would not have an adverse effect on the continued availability of resources.

Any construction of the Rail Improvements Alternative would also require the expenditure and allocation of local, state, and federal funds, which are not retrievable. Once used, these funds could not be used for other projects.

Short-term construction impacts related to earthwork (cut and fill and grading) that would result in dust (PM₁₀) and localized emissions and noise from construction equipment would occur under the Rail Improvements Alternative. These impacts would be in addition to the construction impacts associated with already planned projects included in the No Project Alternative. The potential impacts of this construction activity would be addressed in more detail during project level analysis.

The No Project Alternative would not involve any additional construction-related impacts.

6.2 RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Implementation of the proposed rail improvements would result in some relocations associated with potential property acquisitions and potential relocation of wildlife from habitat disturbance during construction and operation. These factors would be considered in more detail during project level review. While some relocations associated with property acquisition are likely if a decision is made to proceed with the proposed rail improvements, long term benefits would also result, including enhanced long-term productivity related to increased mobility and safety, and the reduced travel time that an improved intercity rail system would provide.

Short-term benefits of the Rail Improvements Alternative include employment opportunities during construction (spread over a number of years) and locally purchased materials and services.

As indicated in Chapter 1, *Purpose and Need and Objectives*, the existing and programmed transportation improvements in southern California will not keep up with the currently projected rate of future population growth and the increased intercity travel demand projected for the region. The proposed rail improvements would provide user benefits (travel time savings, cost reductions, accident reductions) and accessibility improvements for southern California's citizens.

6.3 CEQA Significance

This section describes those environmental effects identified in Chapter 3 that would be considered significant under the CEQA. The potential for the proposed project to stimulate unplanned growth is considered in Section 3.15, *Growth Inducement*. Cumulative impacts are discussed in Section 3.16, *Cumulative Impacts Evaluation*.

Use of the term "significant" differs under NEPA and CEQA. While CEQA requires that the significance of impacts be discussed in an EIR, the NEPA does not require such discussion in an EIS. Under NEPA, significance is used to determine whether an EIS or some other level of documentation is required, and once a decision to prepare an EIS is made, the EIS reports all impacts and discusses feasible mitigation. Under CEQA, significance is used to determine whether to prepare an EIR and then to evaluate the severity of potential adverse environmental impacts in the EIR. The EIR must also discuss feasible mitigation measures that could reduce potentially significant effects to below the level of significance. For this reason, CEQA significance criteria and the determination of significant impacts under CEQA have been addressed separately in this section.

NEPA anticipates that mitigation will be considered for the potential impacts of a project where it would be feasible. For this reason, while consideration of some mitigation strategies described in this EIR/EIS and in this section is appropriate under NEPA, the potential impacts they address may not be considered significant under CEQA.

6.3.1 CEQA Significance Thresholds

CEQA requires that an EIR identify the potentially significant environmental effects of the project (CEQA Guidelines Section 15126), but does not promulgate specific thresholds for significance. Instead, CEQA Guidelines Section 15064(b) states that "the determination . . . calls for careful

judgment on the part of the public agency involved . . .” and that “an ironclad definition of significant effect is not possible because the significance of an activity may vary with the setting.” The fundamental definition of significant effect under CEQA is “a substantial adverse change in physical conditions.” This criterion underlies the evaluation of environmental impacts for most of the impact issues identified in the CEQA Environmental Checklist Form (Guidelines Appendix G). CEQA encourages lead agencies to develop and publish their own thresholds of significance for the purpose of determining the significant effects of their projects. Given the planning-level impact analysis considered in this Program EIR/EIS the Department has not developed project-specific significance thresholds.

Some impact categories lend themselves to scientific or mathematical analysis, and therefore to quantification. Some categories have significance thresholds established by regulatory agencies, such as noise criteria or regional air pollutant criteria. For other impact categories that are more qualitative or are entirely dependent on the immediate setting, a hard-and-fast threshold is not generally feasible, and the “substantial adverse change in physical conditions” is applied as the significance criterion. In the current analysis, the Department has determined to apply the CEQA checklist thresholds to evaluate the significance of effects of the Rail Improvements and No Project alternatives.

CEQA states that economic and social changes resulting from a project shall not be treated as significant effects on the environment (CEQA Guidelines, 15064(e)). Economic or social changes may be used, however, to determine that a physical change should be regarded as a significant effect on the environment. Where a physical change is caused by economic or social effects of a project, the physical change may be regarded as a significant effect in the same manner as any other physical change resulting from the project. If the physical change causes adverse economic or social effects on people, those adverse effects may be used as a factor in determining whether the physical change is a significant effect on the environment. Because the Rail Improvements Alternative primarily would be done within the existing LOSSAN corridor or involve widening of the existing right-of-way, the potential for adverse environmental impacts and for potential economic or social effects is limited since the transportation corridor and its associated impacts are already well established.

6.3.2 Significant Unavoidable Adverse Effects Under CEQA

This section identifies those environmental categories that, given their potential for impact, would be those most likely to experience potentially significant unavoidable adverse effects at some locations along the alignments being considered for the proposed rail improvements. The planning level of environmental review presented in this Program EIR/EIS does not seek to quantify impacts as would typically be done at a project level. Instead, this Program EIR/EIS evaluates the potential for significant effects for each alternative, based on the density of resources and/or sensitive receptors within the project vicinity and thus ranks the potential for impact as high, medium, or low. This is an appropriate assessment of potential impacts at this stage of such a large, regional undertaking. The Program EIR/EIS considers alternatives and options, identifies the lesser impacting approaches in each rail segment, and provides a basis for identifying mitigation strategies that is relevant to the decisions at hand.

Based on this planning level of analysis, therefore, potentially significant unavoidable impacts are only identified generally. With the three-county scope of the project and the size of the geographic area traversed by the potential rail alignment and station options, it is likely not feasible to avoid or reduce all of the potentially significant impacts of the proposed improvements at every location under consideration through project modifications, or to mitigate

all these potential impacts to a less than significant level. Table 6.3-1 provides a summary list of the environmental categories, general mitigation strategies, potentially significant impacts and potential levels of significance after mitigation. Depending upon the alignment options that may ultimately be selected, potentially significant unavoidable effects can be expected at some locations along the rail corridor in the general environmental categories of wetlands and biological resources, hydrology and water resources, and cultural resources, as described on Table 6.3-1. However, neither the extent of such potential impacts, nor the potential locations for such impacts, can be determined at this level of analysis.

For several of the environmental categories listed in the table below (including wetlands, hydrology, and cultural resources) the quantities presented represent areas within which potential impacts might occur by including all the potentially affected resources or acreage in the study area for the resource topic listed. For example, the area of floodplains includes all floodplains within 100 feet of either side of the centerline of the alignment being considered; whereas the right of way needed for the improvements considered and the area which would be used for the improvements being considered (e.g., the footprint for the proposed rail improvement) would be much less, so the potential for impacts would likewise be less. Therefore, the determination of significance is "potential" rather than absolute. The determination of a "potentially" significant or unavoidable impact would be used to focus attention at the next phase of planning and environmental review (project-specific, detailed analysis).

The No Project Alternative may result in potentially significant unavoidable impacts to geology and soils in the areas where the existing rail corridor operates along the coastal bluff slopes in Del Mar and San Clemente. It may also have potentially significant impacts on traffic and circulation due to increasing congestion on area roadways without the additional capacity of an improved LOSSAN intercity rail service.

6.3.3 CEQA Environmentally Superior Alternative

The CEQA Guidelines state that, where the No Project Alternative is the environmentally superior alternative, the EIR shall also identify the environmentally superior alternative from among the other alternatives (CEQA Guidelines 15126.6(e)(2)). Based on the evaluations documented in Chapter 3 of this EIR/EIS, the Rail Improvements Alternative has been identified as the environmentally superior alternative.

The Rail Improvements Alternative would increase the efficiency, capacity, and safety of rail service in the LOSSAN corridor, and decrease passenger costs. Grade separation of the corridor would decrease existing barriers in urban areas, and decrease the impact on roadway travel at intersections with the rail corridor, as compared with the No Project Alternative. Grade separation would also substantially decrease noise from train horns and warning bells along the corridor. In the coastal areas, the Rail Improvements Alternative would have beneficial impacts from removing the existing rail corridor into tunnels, thereby improving aesthetics and reducing the on-going erosional problems along the coastal bluffs areas.

Table 6. 3-1
Potentially Unavoidable Adverse Impacts For System Alternatives

Key Environmental Issues	No Project Alternative	Potential Significance for No Project Alternative	Rail Improvements Alternative ¹	Mitigation Strategy for Rail Alternative	Potential Significance for Rail Improvements Alternative	
					Before Mitigation	After Mitigation
Traffic and Circulation	Capacity is insufficient to accommodate the projected growth. All but one of the 8 intercity highway segments considered would operate at unacceptable levels of service with increased congestion, travel delays, and accidents over existing conditions. Congestion would increase considerably from existing conditions.	Potentially Significant	Congestion reduction on intercity highways as compared to the No Project Alternative. However, the analyses could not take into account potential use of the excess capacity by non-intercity (commuter, and short-distance) trips. Has the potential to help reduce the number of intercity automobile trips. Localized traffic conditions around stations impacted.	Encourage use of transit to stations. Work with transit providers to improve station connections.	Potentially Significant	Potentially Less than Significant
Travel Conditions (Travel Time, Reliability, Safety, Connectivity, Sustainable Capacity, Passenger Cost)	Longer travel times, more delay. Lower reliability due to increased dependence on the automobile. Increase in injuries and fatalities due to increase in highway travel. No net improvement to connectivity options. No significant increase in capacity for highway infrastructure, and significant worsening of congestion due to increased demand.	Potentially Significant	Travel time reduction as compared to the No Project Alternative. Greatest improvement in reliability due to higher reliability of the rail mode; additional modal option improves reliability for overall transportation system. Decrease in injuries and fatalities due to improvements to rail infrastructure. Highest level of connectivity. Provide additional connections to existing modes, additional frequencies, and greater flexibility. Improved rail system would provide sufficient capacity to meet the representative demand and would provide additional capacity with minimal additional infrastructure. Overall savings in passenger costs of 39% on average compared to No Project. Intercity rail passenger costs are competitive with the automobile travel.	Not Applicable	Beneficial	Not Applicable

¹ Quantities are listed as ranges to represent the variation in potential impacts depending on the alignment options selected.

Table 6. 3-1
Potentially Unavoidable Adverse Impacts For System Alternatives (continued)

Key Environmental Issues	No Project Alternative	Potential Significance for No Project Alternative	Rail Improvements Alternative ²	Mitigation Strategy for Rail Alternative	Potential Significance for Rail Improvements Alternative	
					Before Mitigation	After Mitigation
Air Quality (Conformity Rule; tons of pollutants)	Emissions from locomotives in LOSSAN corridor are predicted to increase by 2020 approximately 85% over 2003 levels. Estimated CO 444 tons/year, NO _x 2,284 tons/year, TOG 123 tons/year; PM 81 tons/year; CO ₂ 168,749 tons/year.	Not Applicable	No increase in locomotive traffic or emissions due to proposed project. Air quality benefits from reduced locomotive delays and idling time, vehicular idling at grade crossings. Construction impacts from PM emissions in nonattainment air basins.	Control of construction related emissions.	No impact/beneficial	Not Applicable
Energy Use	Energy consumption is estimated to increase by 2020 to 361,922 barrels of oil annual consumption for operation of locomotives in LOSSAN corridor.	No Significant Impact	No increase in number of locomotives traveling in LOSSAN corridor due to proposed project. Some energy consumption reduction would occur due to reduced congestion and grade separation of rail corridor. Construction energy consumption would be potentially significant use of nonrenewable energy.	Minimize grade changes in steep terrain areas to reduce the use of diesel fuel. Maximize intermodal transit connections to reduce automobile VMT related to the rail system. Develop and implement a construction energy conservation plan. Develop potential measures to reduce energy consumption during operation and maintenance activities.	Potentially Significant	Potentially Significant Unavoidable

² Quantities are listed as ranges to represent the variation in potential impacts depending on the alignment options selected.

Table 6. 3-1
Potentially Unavoidable Adverse Impacts For System Alternatives (continued)

Key Environmental Issues	No Project Alternative	Potential Significance for No Project Alternative	Rail Improvements Alternative ²	Mitigation Strategy for Rail Alternative	Potential Significance for Rail Improvements Alternative	
					Before Mitigation	After Mitigation
Land Use (Compatibility and Property Impacts)	Expansion of urban sprawl as population grows and congestion increases; development on open space. Existing barriers resulting from existing LOSSAN rail corridor in some communities and coastal areas would remain.	No Impact	Most alignments highly compatible with land uses because of existing rail corridor or tunnel proposals. Small amount of property acquisition along existing rail corridor, some acquisition along new rights of way with one alignment option; between 5 and 7 mi. of improvements could affect high impact land uses.	Continued coordination with local agencies. Relocation assistance during future project-level review.	Potentially Significant	Potentially Less Than Significant
Visual Quality	No predictable change to existing landscape. Existing visual impacts of rail corridor on beaches and coastal views would remain.	No Significant Impact	High sensitivity in scenic open space and residential coastal views. Some beneficial impacts would occur by removing existing track from beaches and coastal bluffs.	Design strategies to minimize bulk and shading of bridges. Use of neutral colors and materials to blend with surrounding landscape features.	No Significant Impact	Not Applicable
Noise	More vehicular traffic, rail and air operations from growth in the intercity demand generates more noise. Existing high impacts to noise-sensitive land use/populations would continue or worsen. Noise from train horns and warning bells at grade crossings would worsen due to projected doubling of rail service frequency by 2020. More freight service would have to run at night to accommodate passenger rail during daytime hours.	Potentially significant noise impacts between Union Station and Fullerton during nighttime hours.	20 miles of alignment length statewide would have high impacts to noise sensitive land use/populations (most of which are already impacted by existing rail corridor); all can be mitigated to lower impacts. Noise increase due to increased speeds of trains in the LOSSAN corridor, compared with No Project. Frequencies would not change. Substantial noise reduction from existing conditions due to elimination of horn warning bell noise at grade crossings resulting from grade separation of existing rail line in most alignment options.	Consider sound barriers along noise sensitive corridors; good track maintenance for vibration.	Potentially Significant	Potentially less than Significant

Table 6. 3-1
Potentially Unavoidable Adverse Impacts For System Alternatives (continued)

Key Environmental Issues	No Project Alternative	Potential Significance for No Project Alternative	Rail Improvements Alternative ²	Mitigation Strategy for Rail Alternative	Potential Significance for Rail Improvements Alternative	
					Before Mitigation	After Mitigation
Biology / Wetlands (Includes area within 100 feet on either side of centerline of alignment)	No predictable change from existing conditions.	No Impact	Up to 28 acres of sensitive vegetation, 12,564-15,541 linear feet of non-wetland jurisdictional waters, 20-27 acres of wetlands, and 36-46 special-status species could be affected directly or indirectly.	Work with resource agencies to develop site specific mitigation and impact avoidance strategies for project level review.	Potentially Significant	Potentially Significant Unavoidable
Hydrologic Resources and Water Quality (Includes area within 100 feet on each side of alignment centerline 200 feet total).)	No predictable change from existing conditions.	No Impact	Between 205 and 315 acres of floodplains, 11,760 and 13650 linear feet of streams, and up to 12 acres of lagoons within 100 feet of proposed alignment options, plus some areas crossing the California Coastal Basin Aquifer.	Avoid or minimize footprint in floodplains; conduct project-level analysis of surface hydrology and coastal lagoons; Best Management Practices for construction as part of SWPPP.	Potentially Significant	Potentially less than Significant / Potentially Significant Unavoidable
Section 4 (f) 6 (f) (Parks, Wildlife Refuges) (Includes area within 900 feet on each side of alignment centerline (1,800 feet total).)	No predictable change from existing conditions.	No Impact	From 29 to 33 Section 4 (f) or 6(f) properties could be affected. Most along existing rail corridor so impacts may be minimized. Some opportunity for new parklands to be created where rail would be removed from beaches.	Consider design options to avoid parklands; identify potential site specific mitigation measures.	Potentially Significant	Potentially less than Significant / Potentially Significant Unavoidable
Cultural Resources (Including Section 4(f) Historic Resources)	Low ranking for impacts to archaeological resources and historic property.	No Significant Impact	Medium to High ranking for potential impacts to archaeological resources and historic properties (Improvements would use existing rail corridor and stations; nearby resources developed in historic period). Tunnel options would avoid most impacts.	Develop procedures for field work, identification, evaluation and determination of effects for cultural resources in consultation with SHPO and Native American Tribes	Potentially Significant	Potentially Significant Unavoidable

Table 6. 3-1
Potentially Unavoidable Adverse Impacts For System Alternatives (continued)

Key Environmental Issues	No Project Alternative	Potential Significance for No Project Alternative	Rail Improvements Alternative ²	Mitigation Strategy for Rail Alternative	Potential Significance for Rail Improvements Alternative	
					Before Mitigation	After Mitigation
Growth Inducement	Not Applicable	Not Applicable	Rail improvements would not induce growth because improvements would accommodate projected rail service increases between 2003 and 2020. May change rate of some development around new station (potentially at University Towne Centre	Work with local communities to	No Significant Impact	Not Applicable
Public Utilities	No Impact	No Impact	Potential conflicts with 22 transmission lines, 44 gas lines, 5 ocean outfalls, and 2 major sewer lines. depending on alignments	Relocate or reconstruct or restore utility, consolidate several utilities underground into one conduit during relocation	Potentially Significant	Potentially less than Significant
Geology	Potentially susceptible to seismic hazards; coastal bluffs in Del Mar and San Clemente would continue to require stabilization for reliable operation of existing rail service.	Potentially Significant (could be mitigated to Potentially Less than Significant)	Potential seismic hazards, slope stability in cut sections. Would remove rail service from coastal bluffs in Del Mar and San Clemente, reducing stability problems.	Use of ground motion data and instruments. Routine maintenance of track, slope reinforcement.	Potentially Significant; Beneficial in coastal bluff areas.	Potentially less than Significant
Hazardous Materials	No impact.	No Impact	Disposal, clean-up or remediation of exposure to hazardous materials during construction. Two Superfund, SPL or SWLF sites potentially affected by construction.	Detailed Initial Site Assessment, avoid sites where practicable, sub-surface investigation where needed to characterize sites and identify remediation	Potentially Significant	Potentially less than Significant